

**Summary of the Public Meeting on Disposal Options for Produced Water from Coalbed Methane Operations in the Powder River Basin**  
**August 25, 2001**

**I Presentation**

EPA presented an overview of its methodology for conducting the economic impact analysis on disposal options for produced water from coalbed methane (CBM) operations. The presentation is available on EPA Region 8's web site at <http://www.epa.gov/region08/water/wastewater/npdeshome/cbm/cbm.html>

**II Questions and Answers Regarding the Presentation**

Several participants asked questions at the end of the presentation. The specific questions and EPA's responses are summarized below.

1. *Is it feasible to assume gravity flow into the injection wells?*

EPA responded that gravity flow is technically feasible provided the injection wells are downgradient. Pumps, however, will be included in the costs for deep well injection.

2. *Is the average flow of produced water assumed to be 12 gallons per minute (gpm)? If so, it seems too high as values are expected to be lower in the western portion of the basin.*

EPA responded that the 12 gpm value was obtained from the Bureau of Land Management's Montana Environmental Impact Statement for the Powder River Basin (PRB). EPA stated that it is seeking data on produced water flows for the western portion of the basin.

3. *How will this analysis impact the states?*

EPA stated they hope that the states will consider the data and results from this analysis as they develop their own Best Professional Judgment limits for coalbed methane.

4. *Should coalbed methane BAT limits be technology-based or water-quality based? How does EPA plan to ensure uniformity among the states?*

EPA responded that it is analyzing technology-based limits along with water uses. Water quality limits typically do not exist for a stream receiving CBM produced water. Therefore, when permitting on Indian Country EPA would look to the water uses around the reservation to ensure consistency with designated state uses and work with the tribes to protect their uses and develop water quality standards to protect their uses.

5. *In situations where the state owns water rights on tribal lands, will EPA work with the states to discuss discharge standards?*

EPA responded that they would work with the states before permitting CBM discharges to waters owned by the states to discuss water needs and the potential value of CBM water as a resource.

6. *Is it reasonable to assume that abandoned oil and gas well would always be available as reinjection wells?*

EPA stated that it is seeking data on the availability of abandoned oil and gas wells and feasibility that they could meet the needs for CBM operators. EPA plans to analyze the impacts of drilling new injection wells along with the impacts of using abandoned oil and gas wells for reinjection.

7. *EPA should investigate aquifer issues associated with the use of surface pits.*

EPA stated that aquifer concerns may prohibit the use of surface pits in some situations and that all of the disposal options may have limitations that will be qualitatively discussed in the report.

### **III Public Comment Period**

Five participants signed up to make a presentation during the public comment period of the meeting. Summaries of their presentations are presented below.

1. *Speaker: Roger Muggli, Tongue\_Yellowstone River Irrigation*

Mr. Muggli stated that the Sodium Adsorption Ratio (SAR) generally increases as you go North in the PRB. In general, the higher the SAR value the greater the potential for permanent damage to soils. Mr. Muggli stated that there are about 6-7 different classes of soils in the Tongue River subbasin and that some of these soils cannot incorporate additional sodium loadings without permanent damage. Mr. Muggli urged EPA to be conservative when any limits are set on SAR.

Mr. Muggli stated that storage ponds will only recharge shallow aquifers which will subsequently discharge into surface waters. Mr. Muggli stated that these potentially contaminated shallow water aquifers discharging to surface waters will be uncontrollable and may lead to significant impacts downstream. Mr. Muggli stated that the Tongue River is not capable of handling any additional sodium loadings.

2. *Speaker: Duane Zavadil, Williams Production*

Mr. Zavadil stated that there is considerable variability for a number of important variables (e.g., CBM production, gas:water ratio) across the PRB and the Raton Basin where EPA is focusing its efforts. Mr. Zavadil stated that there is no soil erosion from CBM produced water discharges as riparian plant growth stabilizes the river banks and bottoms. Assessments of these impacts should be conducted in the field. Mr. Zavadil also stated that surface water is more saline than CBM discharges and the natural runoff from these areas is quite brackish.

Mr. Zavadil urged EPA to consider some of the negative impacts associated with each of EPA's CBM technology options. These impacts include requiring additional power usage and building installations for treatment equipment, increased human presence, additional trucks with an increased potential for spills and dust. Mr. Zavadil asked EPA to consider the net environmental benefits of CBM discharges. These benefits include water fowl usage, irrigation, and cattle watering away from river bottom and riparian areas and making use of a larger feeding area. Mr. Zavadil stated that requiring treatment will cause more harm than good.

Mr. Zavadil also stated that produced water discharges are initially high as compared to the lifetime well average discharge. This peaking ratio (initial flow: average lifetime flow) can be greater than 10:1. Mr. Zavadil stated that this might lead to oversizing treatment units to handle these initial peak flows. Mr. Zavadil also stated that the current method of estimating economic impacts by the Net Present Value method may not be appropriate for this industry as this industry is used to very risky investments.

3. *Speaker: Mr. Tom Clayson, Anadarko*

Mr. Clayson agreed with everything previously mentioned by Mr. Zavadil. Mr. Clayson stated that EPA should further investigate its assumption about using abandoned oil and gas wells as injection wells as they are not readily available across the entire PRB. Mr. Clayson asked EPA to include the costs of drilling and installing new injection wells under its injection well zero discharge option.

EPA suggested that operators/commentors provide EPA with a frequency factor for when CBM operators can and cannot use a nearby oil and gas well for CBM produced water disposal.

4. *Speaker: John Dewey, Land Owner*

Mr. Dewey expressed significant concern about the effects of CBM produced water discharges on nearby environments and downstream agricultural and livestock operations. Mr. Dewey referenced wetland drainage due to nearby CBM operations (3 miles from Sheridan). EPA requested that Mr. Dewey send EPA further information on this incident.

Mr. Dewey stated that the off-channel surface impoundment option being considered by EPA does not fully describe the potential for CBM produced water to contaminate shallow

aquifers which will subsequently contaminate nearby rivers. As an example, Mr. Dewey referenced a Wyoming DEQ report which documented nine surface impoundments that initially had 4.95 acre-feet/day of water on average and lost most of the water via infiltration (0.23 acre-feet/day water on average remaining). Mr. Dewey stated that water is not retained sufficiently by reservoirs in Wyoming and Montana because of high rates of infiltration.

5. *Speaker: Mike Bowen, Caribou Land & Livestock Montana LLC*

Mr. Bowen stated that EPA should re-visit its assumptions for the well-head price of natural gas.

#### **IV Participant List**

A copy of the participants list is attached to this summary.

**Coalbed Methane Public Meeting Sign-In Sheet (9/25/01)**

Name	Affiliation	Mailing Address	Phone Number	E-mail Address	Would You Like to Speak?		Type of Affiliation (Check One)				
					Yes	No	Government	Industry	Environmental	Land Owner	Other
David R. Millegan	NC Tribe	PO Box 903 Lame Deer, MT 59043	406 477-6506	environmt2@ hotmail.com					X		
James Lloyd	DEQ, WPB	Helena	444-3927	Jlloyd@ state.mt.us		x	x				
Tom Clayson	Anadarka Pet. Corp.	PO Box 50648 Casper, WY 82605	307 265-2666	tom_clayson@ anadarka.com	X			X			
John Dewy	Landowner	586 Big Goose Rd Sheridan, WY	307 675-8748		X					X	
Gerry Minicii	Devon Energy	500 N. Center Casper, WY 82601	307 472-1266	PowdRivr@ caspers.net		X		X			
Jennifer Kavenius	PAW	951 Werner Court Suite 100 Casper, WY 82601	307 234-5333	Jennifer@ pawyo.org		X		X			

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David Breisch	BLM MT	111 Garryowen Rd. Miles City, MT 59301	406 233-3645	dbreisch@blm.gov		X	X				
Lance Sigismend	Crow Tribe	PO Box 154 Crow Agency 54022	638-3982	lasigismend@yahoo			X				
Todd Bennatt	MT DEQ	Helena	444-0917	tBENNATT@state.mt.us		X	X				
John Bluzheashi	JM Huber	1901 Energy Ct Suite 170 Gillette, WY 82718				X		X			
Jeff Gillum	WY Oil & Gas Comm.	777 W 1 <sup>st</sup> St Casper, WY	234-7147	jgillum@wyoming.com		X	X				
Richard Cool	WOGCC	PO Box 2640 Casper, WY	351-6421	rcool@wyoming.com	X		X				

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John Cummings	JM Huber	PO Box 6850 Sheridan, WY 82801	307 673-8800			X		X			
Steven Sasiku	BOGC	Billings	406 656-0040			X					
Scott Badley	Peak Analytical	2010 N 7 <sup>th</sup> Ave Bozeman, MT 59718	406 585-8160	sales@ peaklaboratory .com		X			X		
Roger Kotschegarow	Williston Basin Interstate Pipeline Co.	PO Box 131 Glendive, MT 59330	406 359-7308	kotsrn@ wbip.com		X		X			
Duane Zavadil	Williams Production	1515 Avapahoe Tower 3 #1000 Denver, CO 80202	303 606-4396	duane.zavadil @williams.com	X			X			
Rick Stefanic	BIA-RMRO	316 N. 26 <sup>th</sup> Billings, MT 59101	406 247-7911	RickStefanic@ bia.gov		X	X				

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David Small	Crow EPA	PO Box 159 Crow Agency 59022	406 638-2962	DaveSmall@ hotmail		X	X				
Cheyrl Phinney	PRBRC	23 N. Scott Sheridan, WY 82801	307 672-5809	Cheyrlp@ powderriver basin.org		X					X
Jeff Barber	MEIC	PO Box 1184 Helena, MT 59601	406 443-2520	jbarber@ meic.org					X		
Dwayne Yellowtail	Crow Tribal EPA, CBM Representative	PO Box 159 Crow Agency MT	406 638-2962		X				X		
Gene Onacko Jr.	BIA	316 N. 26 <sup>th</sup> St. Billings, MT 59101	406 247-7998	eugeneonacko @bia.gov		X	X				
Dallas Johansson	NRCS	Box 659 Lusk, WY 82225	307 334-2953				X				



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Megan Dishang	NPRC					X					
Bruce Williams	Fidelity Exploration & Production	1949 Sugarland Dr. Suite 260 Sheridan, WY	307 672-7111	bruce.williams@fidelityexpco.com		X		X			
Roger Maggli	Farmer/ T&Y Irrigation	Rt 1 Box 2216 Miles City, MT 59301	406 232-4038		X					X	
Alan Cue Three Irons	BIA - Crow Agency	PO Box 69 Crow Agency, MT 59022	406 638-4411	alanthreeirons@bia.gov		X	X				
Harmon Ranney	MCBNGA	PO Box 16894 Missoula, MT 59808	406 722-0014	hranney@jbr-env.com		X		X			
John Heyneman	Padock Ranch Company	PO Box 65 Ranchester, WY 82839	307 655-2264	Johnh@wavecom.net						X	

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Brenda Schilf	BIA Crow Agency	PO Box 69 Crow Agency, MT 59022	406 638-2321	Brendaschilf@bia.gov		X	X				
Connie Howe	CEPP	PO Box 159 Crow Agency, MT 59022	406 638-2962	tigger_howe@hotmail.com	X		X				
Elisha Yarlott	CEPP	PO Box 159 Crow Agency, MT 59022	406 638-2962			X	X				
Tom Schneider	NPRC Consultant	513 First St. Helena, MT 59601	406 442-6464	tschneider3@qwest.net					X		X
Clair Johnson	Billings Gazette	401 N Broadway	406 657-1282	cjohnson@billingsgazette.com		X					X
Robert Old Horn	BIA	PO Box 69 Crow Agency, MT 59022	406 638-4411	Roldhorn@bia.gov		X	X				

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George Hudak	BOGC	2535 St. Johns	406 656-0040			X	X				
Neta Old Elk	Crow Tribe	PO Box 159 Crow Agency, MT 59022	406 638-3971	noldelk@ hotmail		X	X				
Russell Stands-Over-Bull	Crow Tribe	PO Box 258 Pryor, MT 59066	670-7390			X	X				X
Michael Bergstrom	Fidelity Exploration & Production Co.	1625 Broadway STE 1800 Denver, CO 80202	720 931-6455	Mike.Berstrom @Fidelityepco. com		X		X			
Mike Bowen	Caribou Land & Livestock Montana LLC	1300 Walnut St Suite 200 Boulder, CO 80302	303 786-7350	Bowengas@ aol.com		X		X			
Susan Fields	HKM Engineering	PO Box 7010 Sheridan, WY 82801	307 672-9006	sfields@ hkmine.com		X					X

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David Lopez	MT Bur. Mines & Geology	1300 N 27 <sup>th</sup> Billings, MT 59101	406 657-2632	dlopez@mtech.edu		X	X				
Richard Zander	BLM Buffalo Field Office	1425 Fort St. Buffalo, WY 82834	307 684-1161	richard-zander@blm.gov		X	X				
Russell Levens	MT DNRC	48 N Last Chance PO Box 201601 Helena, MT 59620	406 444-6679	rlevens@state.mt.us		X	X				
Glenn Wolloue	NDLC Oil & Gas Div	600 E. Blvd Bismark, ND	701 328-8020	glw@explorer.ndic.state.nd.us		X	X				
Joe Olson	Pennaco Energy	PO Box 278 Gillette, WY 82718-0278									
Mary Vandembosch	Montana Legislative Services Div	PO Box 201706 Helena, MT 59620-1706	406 444-5367	mvandembosch@state.mt.us		X	X				

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Lance Astrella	Astrella & Rice PC	1801 13 Roadway #1600 Denver, CO 80202	303 292-9021	Lance@Astrellalaw.com		X					X
Art Hayn Jr.	Tongue River Water Users	PO Box 578 Birney, MT	406 984-6260							X	
Jim Shaffer	Hydro Solutions	PO Box 80866 Billings, MT	406 655-9555								X